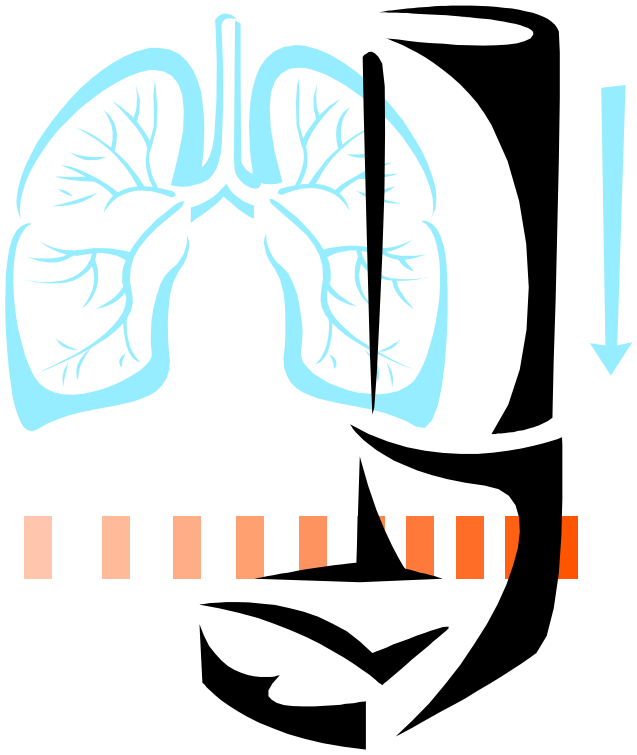
Asthma Program Manual:
A Comprehensive Guide to Planning a Program for Prevention and Treatment of Asthma in Children Under Five



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Executive Summary

Asthma is a chronic inflammatory disorder of the airways characterized by recurrent episodes of wheezing, breathlessness or rapid breathing, chest tightness, and coughing.[1] Asthma can adversely affect the quality of life for children with asthma and their families. Children with uncontrolled asthma experience symptoms that can range from a mild episode to a life-threatening event, and that can profoundly affect all aspects of their lives.[2] Although there is no cure at this time, most asthma episodes can be prevented with appropriate management through use of preventive medicines and provision of a healthy physical environment.[3] About 50% of children with asthma have onset of their symptoms in the first three years of life and 50% to 80% have onset of symptoms before the age of 5 years.[4,5]

Uncontrolled asthma can lead to restrictions in young children's normal activities including sleep, play, learning in preschool and often, disruption in the daily routines of children and their families. Children with uncontrolled asthma frequently miss school -- an estimated 14 million school days per year nationwide. These absences not only impede children's education and learning but also their parent's ability to work and support the family adequately.[6] Helping young children to control their asthma prior to entering school can significantly reduce absences; assuring that the young child is ready to learn on entering school.

The California Department of Health Services (CDHS) implemented the Childhood Asthma Initiative (CAI) between 2001 to 2005, with funding from First 5 California. The CAI evaluated a multifaceted community and clinical intervention program to improve the quality of care provided to children (0-5 years) with asthma and their families. The CAI was a collaborative project that was implemented by three branches of CDHS: the Chronic Disease and Injury Control Branch (CDICB), the Children's Medical Services Branch (CMSB) and the Environmental Health Investigations Branch (EHIB) between 2000 and 2004. The CAI supported eight intervention projects in ten counties and included efforts to serve four primary target groups:

(1) Young children (0-5) and their families,
(2) Health care providers,
(3) Child care and pre-school providers, and
(4) Community supports and services.

The community-based strategies supported community asthma partnerships that included parents; promoted clinical best practices; and educated children, parents, healthcare providers, and childcare providers about asthma. It also involved advocating for local environmental and health policy changes and established community coalitions that include staff at non-profit asthma-organizations, parents, childcare providers, healthcare providers, school administrators, and community leaders. Many of the participating clinics are federally qualified health centers located in medically underserved urban areas that provide outpatient services. In the clinic-based program, the children and their families who enrolled in the program were provided outpatient services, including clinical visits, medications, medication assist devices, laboratory and pulmonary services, asthma education for self-management, and referral to pediatric pulmonary and allergy specialty care.

Caring for a young child with asthma requires a comprehensive approach: one that incorporates medical as well as social/ecological strategies. Professionals in asthma care have produced improved outcomes for young children using this approach. The CAI was designed to demonstrate how to implement an effective asthma care program, using a social-medical model for children under five years of age with asthma. The CAI served 2,926 young children during its 4-year project period. Both the community and clinic program interventions resulted in substantial improvements in participating children's asthma and in the family's ability to manage asthma. These outcomes are described in detail in Chapter One.

Purpose of the Asthma Program Manual

The purpose of the Asthma Program Manual is to support communities wanting to implement community-wide asthma programs and provide optimal care for children with asthma in an efficient and cost-effective manner. The Manual describes a model of care that incorporates a medical-social model to address the three components of the CAI: (1) Clinical Management, (2) Asthma Coordination and (3) Community Coalitions for Better Asthma Care. The Manual is intended to provide:

- Essential tools for local communities to use in implementing best practices,
- Strategies to effectively communicate with providers, families and the community about better ways to manage asthma, decrease asthma episodes, and reduce their adverse affects in children under the age of five.
- Technical support to clinics, communities, and asthma coalitions interested in establishing effective asthma management programs.

How to Use the Manual

The Manual is designed to be used by service providers, asthma program administrators, researchers, parents, and other stakeholders in asthma care. It serves as a resource and learning tool for those who would like to develop and implement an asthma care program for young children in their local community. It provides an overview of asthma clinical management and offers information on how to design, develop, establish, manage, and sustain a comprehensive asthma program for young children.

This manual should be used as a guidebook, a helpful introduction to concepts, philosophies, models, and frameworks on care for young children with asthma. It is designed to assist and share access to better asthma management resources. It serves as an introductory guide and is not meant to provide in-depth and rigorous discourse and scientific analysis of asthma programs and models.

In designing a comprehensive asthma service program, community and clinic programs will have different resources and needs. There is no "one size fits all" model program. The approach of this Manual is to describe a variety of resources, existing model clinics, programs and information about asthma care, collaboration and advocacy. It identifies community-based and medical-care asthma resources in California.

The Manual is divided into six chapters; each describes a particular aspect of developing a comprehensive asthma program:

- Chapter 1 summarizes the Childhood Asthma Initiative;
- Chapter 2 discusses essential asthma best clinical practices;
- Chapter 3 describes the role of asthma coordinators who provide home-based asthma education to families and linkage to clinical care;
- Chapter 4 explores the role of the community as a resource of asthma programs;
- Chapter 5 describes how a program can be sustained through available funding; and
- Chapter 6 concludes the guidebook with asthma community resources, references, and samples of forms and educational materials.

Introduction: The Childhood Asthma Initiative

The California Department of Health Services (CDHS) implemented the Childhood Asthma Initiative (CAI) between 2001 to 2005, with funding from First 5 California to evaluate a multifaceted community and clinical intervention to improve the quality of care provided to children (0-5 years) with asthma and their families. The CAI is a collaborative project that was implemented by three branches of CDHS: the Chronic Disease and Injury Control Branch (CDICB), the Children's Medical Services Branch (CMSB) and the Environmental Health Investigations Branch (EHIB) between 2000 and 2004. The CAI supported eight intervention projects in ten counties and included efforts to serve four primary target groups:

(1) Young children (0-5) and their families,
(2) Health care providers,
(3) Child care and pre-school providers, and
(4) Community supports and services.

This demonstration program was designed with two interrelated components: a community intervention component, entitled the Community-Based Intervention (CBI), administered by CDCB, and a clinical treatment component, Asthma Treatment Services (ATS), administered by CMSB. Contracts were established with eight local communities located in nine counties to implement and evaluate this model program, including: Alameda, Monterey, Los Angeles (2 contractors), Madera, Marin, San Diego, San Luis Obispo, Santa Cruz, and San Francisco counties. Additionally, the CAI included a statewide research project administered by EHIB that included a survey of childcare center directors and staff to determine their knowledge and attitudes about asthma and how to reduce asthma triggers. EHIB also held focus groups of child care providers and provider trainers to identify the best strategies for educating this important workforce about caring for children with asthma. This work helped inform the development of a staff training handbook and video on caring for children with asthma in the preschool and childcare setting.

The goal of the CAI is to improve the health and quality of life for young children with asthma, ages 0–5 years. This effort supports the overall goal of First 5 California to help young children reach their full potential and enter school ready-to-learn. This chapter of the Asthma Program Manual provides information about the significance of asthma in young children and describes the activities and findings from the CAI project.

Background: Asthma Morbidity and Mortality

Asthma is a chronic inflammatory disorder of the airways characterized by recurrent episodes of wheezing, breathlessness or rapid breathing, chest tightness, and coughing.[7] Asthma can adversely affect the quality of life for children with asthma and their families. Children with uncontrolled asthma experience symptoms that can range from a mild episode to a life-threatening event and can profoundly affect all aspects of their lives.[8] "Although there is no cure at this time, most asthma episodes can be prevented with appropriate management, which includes appropriate use of preventive medicines and provision of a healthy physical environment."[9] About 50% of children with asthma have onset of their symptoms in the first three years and 50% to 80% have onset of symptoms before the age of 5 years.[10,11] Asthma is a major public health problem and is expanding at an epidemic rate. Most children have mild to moderate asthma that can be controlled by treatment at home. For some children, uncontrolled asthma becomes a formidable problem causing numerous visits to the hospital emergency room and hospitalizations.

- In 2003, an estimated 4.6 million Californian adults and children reported that they had been diagnosed with asthma at some time in their life. According to the California Health Interview Survey, 2.5 million Californians experienced asthma symptoms in the last 12 months.
- Although asthma affects Californians of all ages, races, and ethnic groups, low-income and minority populations experience substantially higher rates of deaths, hospitalizations, and emergency room visits due to asthma. For example, while African Americans approach ten percent of the state population, they represent almost forty percent of state asthma deaths and thirty percent of state hospitalizations.
- The hospitalization rate for asthma in California is more than three times higher for African American children than for children of other racial groups. Similarly, children in low-income families are more likely to have been diagnosed with asthma than children in families who are not low-income.
- Asthma is the leading cause of chronic illness among children.
- Asthma is the leading cause of childhood hospitalization in California and is the third leading cause of hospitalization for children under age 15 years nationally[12].
- Uncontrolled asthma is a leading cause of school absences.
- In a preschool classroom of 30 children, 3 or more children are likely to have asthma[13].
- In 1999, 658,000 pediatric emergency room visits were due to asthma. The estimated annual rate for emergency room visits among children 5 years old or younger is 137.1 per 10,000 persons - the highest rate of all age groups[14].

Asthma in California Children

Nearly 4.5 million Californians suffer from asthma. Some facts about asthma in children under five from the California Health Information Survey[15] include:

- 8.5% of children under the age five in California have been diagnosed with asthma by a doctor.
- The average age of a child under five diagnosed with asthma by a doctor is one year.
- 54.0% of children diagnosed with asthma had at least one asthma attack in the past 12 months.
- Only 41.7% of children diagnosed with asthma received an asthma management plan from their doctor.
- 46.4% of children diagnosed with asthma visited the emergency department or urgent care for asthma in the past 12 months.

Prevalence rates for asthma symptoms have been reported to be higher among low-income, urban children than among suburban and rural children[16]. Asthma hospitalization and mortality rates have also been associated with indicators of low socio-economic status[17]. Inadequate primary care or lack of health insurance coverage contributes to the excess deaths and hospitalizations for asthma in poor neighborhoods. Environmental factors may also partially account for the disproportionate burden of asthma morbidity in low-income neighborhoods[18]. Poor housing conditions, including cockroaches, dust, old carpets, mold, crowding, and inadequate ventilation may contribute to the development and exacerbation of asthma. All of this contributes to the importance of an asthma program that addresses these factors.

The Childhood Asthma Initiative: Program Description and Outcomes

The Community-Based Intervention (CBI) Project

The CBI Project was established to address the needs of young, low-income children (ages 0 to 5 years) with asthma, including those who do not have health insurance. These children often have reduced access to quality health care and have higher asthma morbidity. As a comprehensive program, CBI was designed and implemented to test how different evidence-based interventions and service models can effectively improve community support systems to best meet the needs of young children with asthma and their families. The CBI supported community asthma partnerships that included strategies to promote clinical best practices and educate children, parents, healthcare providers, and childcare providers about asthma. It also involved advocating for policy change and forming coalitions of community organizations and individuals including non-profit organizations, parents, childcare providers, healthcare providers, school administrators, and community leaders who worked to reduce childhood asthma in their communities.

The CBI Project trained Asthma Coordinators (ACs) to work closely with families and children to help them learn how to control the children's asthma, to increase their confidence and capability in managing asthma, and to communicate more effectively with their healthcare and childcare providers. ACs also helped to establish a medical home for children with asthma and to facilitate enrollment in health insurance programs. These services were provided to parents and children in their home and at clinic visits. Healthcare providers also benefited from taking part in CBI activities, specifically through the statewide Asthma Management Quality Improvement Collaborative, aimed at helping clinicians and their staff provide high quality asthma care for their youngest patients.

The Asthma Treatment Services Project

The Asthma Treatment Services (ATS) component of the CAI focused on improving asthma clinical services for young children. It was a demonstration project designed to better understand the clinical service needs of young children with asthma and to determine the optimal systems for providing quality asthma care. Uninsured and underinsured low-income children with **persistent** asthma were enrolled in eight clinics located in three of the eight communities that also provided CBI services. They three communities are: Oakland, San Diego, and Los Angeles. The ATS contractor in Oakland (Children's Hospital Oakland) worked closely with the CBI project contractor (Alameda County Public Health Department), the ATS clinics in Los Angeles collaborated with the CBI contractor (Asthma and Allergy Foundation of America), and the San Diego clinics (managed through the Council of Community Clinics) worked with the CBI contractor (American Lung Association of San Diego/Imperial County). Most of the eight participating clinics are federally qualified health centers located in medically underserved urban areas that provide outpatient services. They are located in ethnically diverse urban communities with a high prevalence of asthma in young children.

These children and their families were provided outpatient services at the ATS clinics. These services included clinical visits, medications, laboratory and pulmonary services, asthma education for self-management, and referral to pediatric pulmonary and allergy specialty care. They were also given asthma medications and medication devices such as spacers. Uninsured families of children enrolled in the project were also provided insurance eligibility and enrollment assistance. For children with asthma, access to a medical home was a key goal of the project.

A child having a regular healthcare provider is likely to receive more effective care, consistent parent and child education about asthma self-management, and appropriate modifications in an asthma management plan. It was also expected that having a medical home would reduce or eliminate the families' dependence on emergency services for treatment of asthma exacerbations.

Each participating clinic had a board-certified pediatrician who was responsible for providing the initial evaluation and treatment plan. Either a physician or a pediatric nurse practitioner (PNP) provided all ATS outpatient clinical services. Hospitalizations, emergency services and non-asthma related outpatient care were not covered by this project. Diagnostic evaluations to rule out diseases that have signs and symptoms similar to asthma were not covered. At the time of enrollment, children needed to have a "persistent asthma" diagnosis. However, making a diagnosis of persistent asthma may require multiple observations by a clinician; therefore, up to three visits were covered with ATS funding to provide the clinician with additional observation of the child to confirm the diagnosis of persistent asthma. ATS clinicians received training on the NHLBI guidelines. They participated in clinical Continuous Quality Improvement collaboratives and developed quality improvement programs customized for their population and clinic configuration.

Other accomplishments of the eight ATS projects included building asthma coalitions and strengthening local asthma-related policies and regulations. The CAI also implemented Continuous Quality Improvement programs with healthcare providers in order to affect the quality of asthma care given to children in the clinics. Local projects developed asthma educational materials and tools, both for clinic and community use, which were disseminated across projects to spread the knowledge gained by those participating in the CAI.

Summary of Major Findings from CBI and ATS Components[19]

The CAI -- CBI and ATS components -- served 2,926 children (ages 0 – 5) during its four-year project period. Both the community and clinic programs produced substantial improvements in the major outcome variables being evaluated. The following are the improvements in health and quality of life variables that were seen throughout the project period, based on a cross-sectional analysis.

Health Measures:

↓ in hospitalization rate
63% decrease in ATS
68% decrease in CBI
↓ in emergency department visits
48% decrease in ATS
65% decrease in CBI
↓ in the frequency of asthma symptoms:
25% decrease in ATS clients average "symptom score"
80% decrease in CBI clients with "frequent" symptoms
↑ in the number of children taking their asthma medications correctly
120% increase in ATS patients taking both long-term controller and quick-relief medications correctly
↑ in the number of children who received an asthma management plan from their doctors
105% increase in CBI
↓ in the number of children exposed to tobacco smoke
32% decrease in CBI clients

Quality of Life Measures:

↓ in lost sleep due to asthma
62% decrease in children
59% decrease in parents
↓ in the number of parents missing work or school
58% decrease in ATS
40% decrease in CBI
↓ in the number of children missing childcare or preschool
42% decrease in ATS
52% decrease in CBI

It should be noted that the enrollment eligibility criteria for ATS and CBI varied; ATS clients all had a diagnosis of persistent asthma and were initially uninsured at enrollment; CBI clients were diagnosed with asthma including intermittent asthma and were mostly insured at the time of enrollment. ATS clients as a population had more severe asthma and were more likely to have only episodic care. These differences in eligibility criteria may explain the differences in outcome variables.

Clinical Management: Lessons Learned from the Asthma Treatment Services Project

This chapter will focus on the clinical management of asthma in young children. The CAI Asthma Treatment Services (ATS) Project effectively used a social-medical model of service delivery in providing care to young children with asthma. The clinical management strategies described are based on national and state asthma guidelines for best practices. The components of this program are discussed from the perspective of the patient and the clinician. The following information is provided to assist health care clinicians and asthma coalitions that may want to establish an effective, evidence-based asthma program in their clinic or community.

Background: The Social-Medical Model of Care

The social-medical model of care provides a comprehensive approach to asthma care that:

- Focuses on prevention as well as treatment;
- Promotes services that address barriers to asthma care; and
- Encourages a comprehensive approach to clinical care that includes assessment, monitoring, control of triggers and co-morbidities, pharmacology, a written asthma action plan, patient/parent education, and referral to special care.

The child's social environment, as well as his or her physical environment, have a direct effect on the occurrence of asthma symptoms and the outcomes of asthma care. The Pew Environmental Health Commission estimates that 15% of asthma cases can be directly attributed to poverty[20]. As a consequence, clinical management must not only address the child's asthma condition, but also take into account the following social factors that influence asthma:

(1) substandard housing and poor indoor air quality;
(2) language and cultural barriers;
(3) psychological issues including depression;
(4) Poor access to specialty care, often due to lack of health insurance coverage for care and costly asthma medicines;
(5) Non compliance with treatment; and
(6) Lack of health literacy as evidenced by a lack of knowledge and understanding about how to control asthma[21].

Effective asthma clinical management includes a home care component with supportive counseling and education for children and their parents. The CAI addressed the social aspects of treating asthma, both in the clinic and through community outreach and education.

CAI Asthma Treatment Services
Outcomes from a Social – Medical Model of Care[22]

The CAI Asthma Treatment Services (ATS) program provided comprehensive clinical outpatient care that was linked to the Community Based Intervention program for home-based education and support services provided by Asthma Coordinators. The ATS program provided the essential components of care to patients and incorporated changes in clinical practice by providers. While the intensity and comprehensiveness of the care provided varied from clinic to clinic – due, in part, to differences in each clinic's population demographics, patient's health and social needs, and program resources -- the overall asthma outcomes for children enrolled in ATS improved in all settings. The following outcome measures were evaluated at the first visit and the last visit for those children who had at least two visits to the clinic. Findings include:

Clinical Measures:
120% ↑ in children taking both long-term controller and quick-relief medicines
63% ↓ in hospitalization rates than in the preceding 6 months
61% ↓ in visit rates for acute and follow-up care for asthma exacerbations
48% ↓ in emergency visits than in the preceding 6 months
Social Measures:
62% ↓ children who lost sleep at least 1 night in the last 4 weeks
59% ↓ parents who lost sleep at least 1 night in the last 4 weeks
42% ↓ in children who missed at least 1 day of daycare or preschool in the last 4 weeks
58% ↓ in parents who missed at least 1 day of work in the last 4 weeks

Effective asthma clinical management supports the overall goal of teaching the child and family how to control the child's asthma. Controlled asthma is defined by the child being able to sleep through the night, not be hospitalized or require emergency department visits, having minimal or no symptoms during the day or night, minimal or no need for quick relief medicines, no limitations in physical activity, and normal lung function (as defined by a peak flow at 80% of predicted or best).

Successful evidence-based, asthma management practices include the following essential components in their asthma plan of care:

Patient-Focused Asthma Management Components[23]

- Assess, diagnose and monitor asthma
- Control factors triggering asthma episodes
- Manage with proper medicines
- Establish a care partnership among child, parent and clinician
- Provide culturally and linguistically competent care
- Integrate patient health education throughout the clinic
- Use a chronic care model in the clinic
- Educate staff and clinicians on best practices
- Implement a quality improvement system

The following describes these essential components including the goals, key points, and importance (or rationale) and challenges of each. Implementing these recommendations will provide a framework for establishing effective asthma management in clinical practice. This information is based on the National Heart, Lung and Blood Institute asthma guidelines[24] and the experience from implementing and evaluating the CAI.

Assess, Diagnose, and Monitor

Goals

- Establish a written asthma diagnosis and written plan
- Classify the child's asthma severity
- Schedule routine visits
- Refer to specialty care for child with moderate/severe persistent asthma
- Identify and mitigate factors that trigger asthma

Key Points

- Every child and parent should be taught to recognize the child's symptom patterns that indicate inadequate asthma control and how to treat it. Symptom monitoring should determine the need for intervention, including additional medicine, and be described in a written asthma action plan.
- Symptoms and clinical signs of asthma should be assessed at each health care visit through history and physical examination. This is crucial to optimal asthma care[25]

Importance and Challenges of Assessment, Diagnosis, and Monitoring[26]

Service Area	Importance	Challenges
Diagnosis	▪ Consistency of care ▪ Early treatment ▪ Parent education	▪ Time ▪ Variable provider opinions about the diagnosis ▪ Fear of labeling the child ▪ Claims delays, pharmacy data
Classification of Asthma Severity	▪ Most Important step in management ▪ Facilitates communication (with partners, emergency department) ▪ Tracking of severity over time (e.g., seasonality, responses to meds)	▪ Difficult to classify off medicine ▪ Unstructured nature of charts and documentation ▪ Must evaluate multiple criteria ▪ Don't forget cough and nocturnal symptoms ▪ Severity can change over time
Monitoring	▪ Opportunity to review status, assess pulmonary exam and modify therapy ▪ Opportunity to review progress toward treatment goals, make appropriate adjustments and revise management plans ▪ Clinician assessments and patient assessments are the primary methods for monitoring asthma	▪ Time ▪ No shows ▪ Systems to track appropriate visit interval and link to severity ▪ Use of severity-based measures and timeline ▪ Reimbursement

Control Factors Triggering Asthma Episodes

Goals

- Recommend measures to control asthma triggers
- Treat or prevent all co-morbid conditions

Key Points[27]

- Children exposed to irritants or allergens to which they are sensitive have shown increased asthma symptoms and higher number of asthma exacerbations.
- Patients with persistent asthma should be given an annual influenza vaccine.
- For patients with persistent asthma on daily medicines, the clinician should identify allergen and irritant exposures, and use the patient's medical history to assess sensitivity to seasonal allergens.
- Use skin testing or in vitro testing to assess sensitivity to perennial indoor and outdoor allergens.

- Assess the significance of positive testing within the context of the patient's medical history
- Patients with asthma at any level of severity should avoid: exposure to allergens and irritants to which they are sensitive; exposure to environmental tobacco smoke, and rigorous outdoor exercise when levels of air pollution are high
- Use of beta-blockers
- Exposure to sulfite-containing foods to which they are sensitive, such as shrimp or dried fruits

Manage with Proper Medicines

Goals

- Prescribe medicines according to severity to control asthma
- Monitor and minimize use of B2-agonist medicines
- Treat persistent asthma with controller medicines

Key Points[28]

- Misdiagnosing, under-diagnosing and inappropriate treatment are major contributors to asthma morbidity and mortality.
- Persistent asthma is most effectively controlled with daily anti-inflammatory therapy using inhaled corticosteroids. Inhaled corticosteroids are the most potent inhaled anti-inflammatory agent currently available to treat asthma.
- A stepwise approach to pharmacologic therapy is recommended. The stepwise approach to asthma therapy emphasizes initiating higher-level therapy at the onset to establish prompt control and then stepping down.
- Regular follow-up visits (at 1- to 6-month intervals) are essential to maintain control and consider appropriate step down in therapy.
- Pharmacologic treatment strategies should be considered in concert with clinician-patient partnership strategies -- education is essential to achieving optimal asthma control.

Fear of Steroid Medicines: It is important to educate families that the steroid medicine prescribed for a child with asthma is not the same as the anabolic steroids abused by athletes to increase the size of their muscles causing life-long damage to their bodies. Controller medicines -- *inhaled corticosteroids* -- are used to reduce inflammation in the lining of the airways. The dose of steroid taken when inhaled with a metered dose inhaler or nebulizer is very small and goes directly to the lungs, not through the blood stream. Encourage family members to talk with their doctor about their concerns.[29]

Facts about Inhaled Steroids

NAEPP's *Guidelines for the Diagnosis and Management of Asthma*[30] address the fear of possible long-term adverse effects from children using inhaled corticosteroids by stating:

- Poorly controlled asthma may delay growth in children.
- Most studies on the children's use of inhaled corticosteroids have not demonstrated an effect on growth; however, a few have identified temporary delay in growth.
- Low to medium doses of inhaled corticosteroids may have the potential to decrease growth rate (resulting in a small difference in height in the first year of treatment). This effect on growth rate is not continuous in the following years of treatment. It may be reversible.
- There is strong evidence from clinical trials following children up to six years old that the use of inhaled corticosteroids at recommended doses does not have clinically significant adverse effects.

NAEPP concluded that inhaled corticosteroids improve health outcomes for children with mild or moderate persistent asthma and the potential but small risk of delayed growth is well balanced by their benefits.

Importance and Challenges of Managing with Proper Medicines[31]

Service Area	Importance	Challenges
Medicines	▪ Most significant clinical change ▪ Early treatment with anti-inflammatory may prevent long-term airway remodeling (define for non-clinicians)	▪ Overuse of short acting beta2agonist ▪ Inadequate inhaled corticosteroid dose ▪ Inadequate Cromolyn dose and use ▪ Education and skills required for appropriate use ▪ Adherence ▪ Fears ▪ Importance of spacer and mask
Equipment	▪ Appropriate choice of delivery device improves adherence to treatment plan and effectiveness of medicine ▪ Holding chambers provides more predictable drug delivery than MDI alone ▪ Decreased side effects because larger particles trapped	▪ Access to care ▪ Correct technique needed for maximum effectiveness ▪ Child/family education ▪ Additional burden of cleaning, maintaining equipment ▪ Use of masks ▪ Costs ▪ A second set of equipment to leave at the child care setting if needed

Establish a Care Partnership among Child, Parent, and Clinician

Goals

- Establish a partnership among child, parent, and clinician
- Provide routine education on self-management
- Develop and update a written asthma action plan

Key Points[32]

- Patient/Parent education should begin at the time of diagnosis and be integrated into *every* step of clinical asthma care.
- It is essential that all members of the health care team provide education. The principal clinician should introduce the key educational messages and negotiate agreements with parents; these messages should be reinforced and expanded by all members of the health care team (Nurse, Asthma Coordinator, and Medical Assistant).
- Teach asthma self-management, tailoring the approach to the needs of each patient and their family. Maintain sensitivity to cultural beliefs and practices.
- Teach and reinforce at *every* opportunity: basic facts about asthma, signs of an asthma episode, roles of medicines, skills: nebulizer/inhaler/holding chamber use, self-monitoring, environmental control measures, when and how to take rescue medicines, what is an asthma emergency, and what to do during an emergency.
- To encourage an active partnership, provide all families with a written daily self-management plan and an action plan for exacerbations. Action plans are especially important for patients with moderate-to-severe asthma and patients with a history of severe exacerbations.

Provide Culturally and Linguistically Competent Care

The Cultural and Linguistic Appropriate Standards (CLAS) are a framework for guiding implementation of culturally and linguistically appropriate asthma care in a common direction among a group of providers or clinics. Following the CLAS standards and adopting a combination of approaches, customized to the community or clinics involved, can produce an effective level of communication between parents and providers. The CLAS are complex and comprehensive. Their outcomes may be difficult to measure because the standards require some flexibility in how they are implemented[33,34,35].

Child/Parent Services:

- Promote recruitment and maintenance of a diverse staff and leadership
- Provide on-going cultural sensitivity staff training
- Offer bilingual staff and interpreters at no cost to clients
- Family and friends should NOT be used to provide interpretation services
- Provide written material in the family's preferred language

Organizational Support

- Maintain a current demographic, cultural and epidemiologic profile of the community and its patient population
- Ensure that conflict and grievance processes are culturally and linguistically sensitive
- Include a cultural competence section in the organization's training manual
- Include cultural and linguistic procedures to program activities

Strategies for Developing a Culturally and Linguistically Competent Program[36]

Activity	Rationale
1. Organize a workgroup and internal grassroots support	Create a workgroup whose function is to develop a cultural and linguistic competency program. The group should develop philosophies, definitions, model, framework and the conceptualization of cultural and linguistic competency measures and application.
2. Conduct a Needs Assessment	Conduct patient community needs assessment (collect demographic data of patient population and the community).
3. Define the philosophy, mission and goals	Establish a set of philosophy, mission and goal whereby they work under their one unified vision.
4. Develop a framework and model of care	Translate philosophy, goals, missions and legislation into feasible, measurable model of care, program guidelines, and curriculum.
5. Implement CLAS program	Conduct cultural and linguistic competency activities (Please see above sub-section on client/patient services and organizational support) on an ongoing basis
6. Conduct evaluation	Develop an evaluation strategy that measures process and outcome of the program.

Integrate Patient Education Throughout the Clinic

The opportunities to educate and inform the child and parent with asthma can be integrated into each step of the clinic visit. Clinicians and staff can take "teachable moments" to provide asthma education while the patient is waiting to be seen or through reinforcing information provided by the clinician with written materials when the patient leaves the clinic. Key to effective education is considering the factors that effect a patient's health literacy.

Health Literacy

"How hard can it be to select the proper spoon to administer medicine?

It is actually surprisingly difficult! The Institute of Medicine (IOM) found that very few people could pick out the correct size spoon to hold 5 ml of liquid medicine. This test is one of the ways the IOM panel illustrated its point that nearly half of all American adults, or 90 million people, have difficulty understanding and using the health information that is dispensed in physicians' offices and in hospital discharge instructions."[37]

Being "health literate" requires more than just being able to read health literature. According to the Joint Committee on National Health Education Standards, to be health literate, a patient (parent) must be able to:

- Maneuver through the healthcare system
- Recognize cues for action and how to complete health forms
- Provide consent and follow regimens
- Understand complex directions
- Communicate with health professionals

The National Adult Literacy Survey (NALS) found 40–44 million Americans, or about a quarter of the adult population, are functionally illiterate[38]. Unfortunately, many patients (parents of young children) with the most extensive and complicated health care problems are at greatest risk for misunderstanding their child's diagnoses, medicines, and instructions on how to take care of their medical problems.

> *"Twenty-five years ago, patients newly diagnosed with asthma were instructed to take their Theophylline regularly and encouraged to be diligent about compliance with follow-up appointments. Today, practitioners ask to monitor their disease with a peak flow meter, select and correctly use multiple appropriate inhalers, sometimes augment therapy with tapering doses of oral steroids, and identify and avoid environmental triggers that exacerbate their asthma. Additionally, patients are expected to properly use, but not overuse, various sites for care including the emergency room, their primary care physician and sub-specialists. The complexity of diagnosing and treating just one of the most common chronic medical conditions challenges many physicians. Yet, patients are expected to acquire the necessary disease knowledge and complex self-management skills in busy practice settings that increasingly equate time with money."*[39]

Health promotion and education information has traditionally been given in the form of printed materials that are written at or above 10th grade reading levels. These educational materials are not accessible to the millions of Americans with inadequate literacy[40]. Clinic staff needs to keep this literacy barrier in mind when planning health education strategies such as how providers communicate with parents verbally and in writing, and deciding which pre-printed educational materials are given out to families.

Strategies to Improve Education Materials

The CAI used several strategies to address the health literacy of the families of patients enrolled in the program. The following "Strategies to Improve Educational Materials" are recommended and were developed by the Health Care Strategies and Pfizer Clear Health Communication Program:

- Tailor medicine schedules to fit daily routine. Color coding medicines and using daily events as reminders to take the medicine can help increase compliance.
- Use videotaped educational materials to increase knowledge and promote correct self-care.
- Use common words. For example, replace "active role" with "take part in," "allergen" with "something that causes allergies," "Persistent" with "constant, lasting."
- Use clear captions, ample "white space," and pictures or diagrams to reinforce message.
- Limit one or two educational objectives per educational material. Be specific about what the reader will *learn* and *do* after reading the material.
- Emphasize the desired behavior rather than the medical facts.
- Replace complicated medical or technical words with plain language.
- Use pictures and diagrams that clarify written concepts

Use a Chronic Care Model in the Clinic

A clinic asthma program needs to be structured and equipped with resources and information relevant to the provider and patient, clinical quality improvement and disease management. Ideally, it should include active partnerships between patients and their primary care physicians on managing asthma. In this section, we highlight two organizing strategies that were used in the CAI and can be used in developing an asthma clinic either as a specialty clinic or a service within a general practice: 1) the chronic care model and 2) the clinical pathway.

The Chronic Care Model

The Chronic Care Model is a new paradigm in quality care that synthesizes systems with better outcomes. The MacColl Institute for Healthcare Innovation http://www.improvingchroniccare.org/change/model/components.html developed a model of promising strategies for chronic illness management that identifies the essential elements of a quality health care system for chronic disease care. The elements of the model involve the community, the health care system, self-management support, delivery system design, decision support and clinical information systems . The model can be applied to a variety of chronic illnesses, health care settings, and target populations. The outcomes from using this model are healthier patients, more satisfied providers, and reductions in costly hospitalizations and emergency visits. The "Yes We Can" program team, for instance, has put together a model of care for the asthma clinic that incorporates the Chronic Care Model.

The Clinical Pathway

The Yes We Can team also developed a model pathway for clinical care. The pathway follows the movement of the Community Health Worker/Asthma Coordinator through the asthma program. It shows how family's flow through the asthma program from referral to exit for each of the four levels of care. The four levels of care are: (1) self-management support, (2) basic case management, (3) moderate case management, and (4) intensive case management. It is an excellent source for designing a clinical asthma model of care. The intervention pathway includes home visits, asthma clinic visits, and telephone follow up calls. This pathway can improve practice in asthma management, thus raising the standard and quality of care. [41]

Central to the discussion of quality improvement is clinician education. By learning the most up-to-date information about research findings and asthma clinical practice, clinicians and staff are more equipped to handle complex asthma patients. Training sessions that incorporate the entire asthma team can enhance teamwork. Administrative staff, in gaining new awareness on asthma, can better understand the clinician's perspective and support the relationship between patients and clinicians.

The CAI-supported provider training through the Child Health and Disability Prevention Program by providing educational materials and anticipatory guidance for parents and children. The CAI also supported a web based provider education program that can be reviewed at the website, http://www.bettercareforasthma.org.

The CAI Asthma Learning Collaborative[42]

The National Institute of Childcare Healthcare Quality (NICHQ), created an Asthma Learning Collaborative involving the asthma staff and clinicians from 9 community health clinics and 8 communities involved in the CAI project. Approximately 75 healthcare providers representing the 9 clinic teams participated in an intensive nine-month group learning process. Their mission was to improve the quality of asthma care provided to children. Faculty and teams worked together to meet the collaborative goals; sharing best available methods used by similar site and evidence based scientific knowledge about care for patients with asthma. By building a model for optimal care for persons with chronic disease, the teams maximized the quality of life for children with asthma. Training covered the following: care models for child health diagnosis, models for improvement, family and self management support, measurement of quality improvement, clinical information systems, and delivery system design.

Sessions Included:

1. Development of key change strategies for improving community-based care
2. Provision of tools and reports to assist clinical practices
3. Creation of an asthma registry
4. An action-based training program
5. Working with the collaborative to develop an active list serve to promote communication and enable problem solving and idea sharing among the participating teams.

Methods of Learning:

- Learn from faculty and colleague
- Receive coaching from faculty members and the NICHQ team
- Gather new knowledge on the subject matter and process improvement plans
- Share experiences and collaborate on improvement plans
- Work in collaborative team environment
- Review Case Scenarios
- Problem solve and plan strategies to overcome barriers

Study Outcomes
The nine-month intensive NICHQ learning sessions were evaluated and studied. The learning collaborative lead to significant improvements in the asthma care provided to their pediatric patients. Key achievements of the collaborative include:

- The percentage of providers appropriately diagnosing asthma severity increased from 55% to 98%.
- Appropriate prescription of asthma control medicines increased from 59% to 80%.
- Patients receiving written asthma management plans from their providers increased from 35% to 95%.

Implement a Quality Improvement System[43]

Clinic teamwork and collaboration among staff are key to quality improvement. The purpose of forming a collaborative such as an asthma team is to share successes, plan strategies to make improvements, share challenges, share resources, get support, hear new ideas, and share periodic clinic updates. The following are the steps to improving clinic quality:

- **Form a quality improvement team**. An active, motivated multidisciplinary team is key to successful improvement efforts. Include representatives from different clinic discipline/perspectives such as physicians, nursing staff, administrative/front desk staff, social services staff, medical records employees, and information systems/data specialists.
- **Identify the team's goal or "aim"**. The team's aim should be time specific and measurable.
- **Develop a measurement strategy**. The team should focus on measuring the improvement of care for children diagnosed with asthma. Measurement will help you evaluate the impact of your changes to improve delivery of care to your asthma population.

Fundamental Questions for Quality Improvement System

1. AIM: *What are we trying to accomplish?* A written statement of the accomplishments expected from each team's improvement effort.

2. MEASURES: *How will we know that a change is an improvement?* The purpose of measurement and data collection is to help you determine how effective your quality improvement efforts. Key outcome and process measures are required to assess progress toward your aim.

Guidelines for Developing Measures for Quality Improvement[44]

- Keep it simple – focus on a few measures (e. g. rates of hospitalization or emergency visits, written asthma severity diagnoses)
- Seek usefulness, not perfection – integrate measurement into daily routine
- Use outcome and process measures – clarify the aim and make it tangible
- Gather some qualitative data
- Make use of your database for measurement
- Use sampling – reviewing 4 – 5 charts per week can yield important information
- Plot data on the measure over time
- Use two to five measures will provide enough data to be able to measure change, while using only one measure could be explained by chance.

Asthma Case Coordination: The Role of the Asthma Coordinator

The CBI Project trained Asthma Coordinators (ACs) to work closely with families and children to help them learn how to control the children's asthma, to increase their confidence and capability in managing asthma, and to communicate more effectively with their healthcare and childcare providers. ACs also helped to establish a medical home for children with asthma and to facilitate enrollment in health insurance programs. These services were provided to parents and children in their home and at clinic visits. This chapter provides information on the ACs roles, responsibilities, and training as part of an effective asthma program.

The goal of asthma case coordination is to assist families with asthma self-management and with the development of an individualized comprehensive education and home care follow-up plan. In the CAI, local agencies recruited ACs for each project site based on a community needs assessment and the local demographics of the population being served. A key consideration was the ability to provide culturally and linguistically competent services. ACs were based both within clinics and community organizations, and worked in teams with other educators and/or clinical practitioners. ACs represented a range of professional experiences and backgrounds that included respiratory therapists, social workers, health educators, medical assistants, nurses, and community health workers.

ACs received skills training in asthma management that was coordinated by the local projects and based upon NAEPP guidelines. Community nurses, physicians, respiratory therapists, pharmacists, and health educators provided the local AC training. Standardized instructional materials were not used, but AC training at all project sites emphasized core competencies including the skills and knowledge needed to perform their role. ACs should have comprehensive, current knowledge of asthma pathophysiology and management, including human development, cultural aspects, chronic illness and teaching-learning principle. They should also understand how asthma is diagnosed and how to assess its control.

National Cooperative Inner-City Asthma Study (NCICAS)

The NCICAS, initiated in 1991, was among the first programs to establish the importance of asthma coordination. It used Asthma Counselors (in this case, trained Masters-level Social Workers) in delivering quality asthma care. The NCICAS intervention took an approach that empowered the family to increase their asthma self-management and to improve their interaction with the primary care physician. It stipulated that simply increasing asthma knowledge is not sufficient to alter morbidity. The program focused on both problem-solving and asthma education. As part of the NCICAS protocol, the Asthma Counselors were allowed the flexibility to determine the number of contacts with the family based on the family's unique needs. These needs frequently were not asthma-related but were problems inherent with living in an inner city environment. Addressing these problems helped to reduce distractions in the family's life, providing them with the ability to focus more clearly on the child's asthma concerns[45].

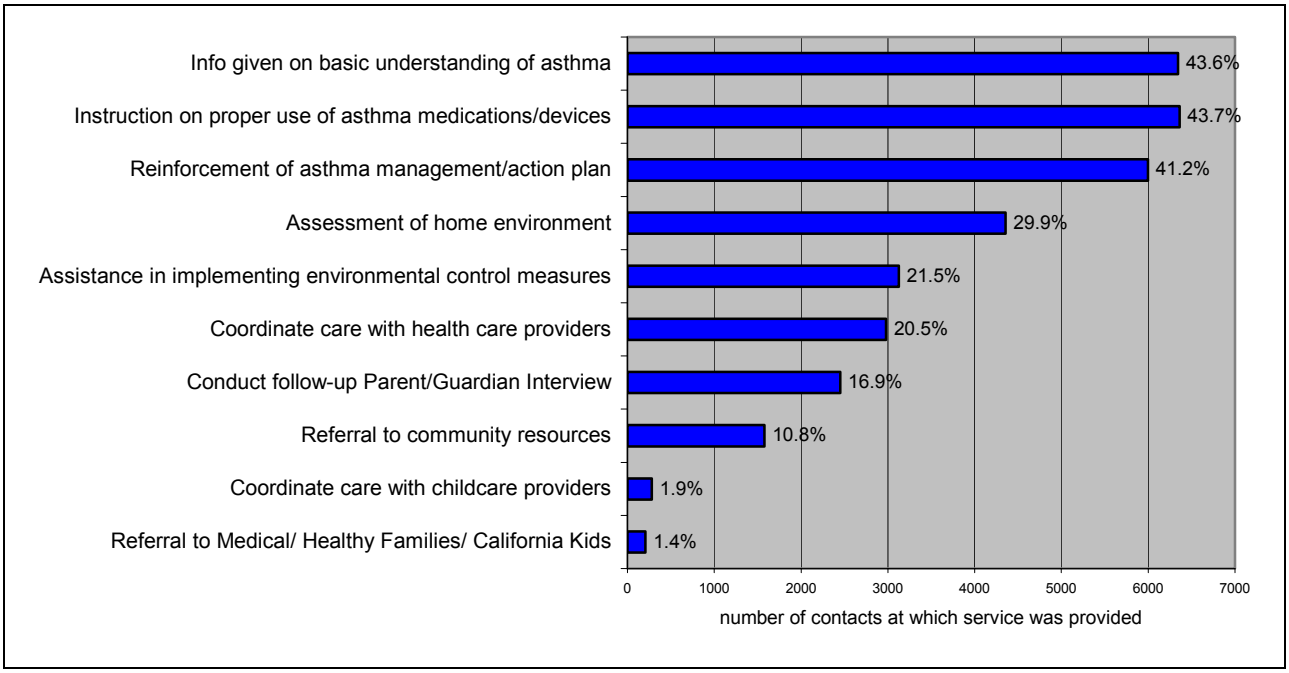
Common Asthma Coordinator Activities[46]

The following provides a list of services and activities that ACs provided in the CBI Project. The ACs:

- Served to monitor diagnosis and treatment;
- Functioned as an expert in counseling asthma patients;
- Provided the link between the medical and social clinical care model;
- Provided linkages with other providers (e.g., child care, specialists, etc.);
- Taught best use of medications/delivery devices, explaining technical concepts in understandable terms to child's parents;
- Conducted individual and family assessments to identify strengths, psychological factors, resources, social and economic impact, educational needs and barriers to optimal health care and self-management;
- Worked with the child with asthma, their families, and healthcare professionals to develop, implement, monitor and revise the asthma action plan, customized to individual needs, environment, disease severity and the family's lifestyle;
- Monitored asthma education program outcomes and recommends changes to improve quality and effectiveness;
- Coordinated the asthma care team;
- Assisted families to coordinate child care among primary and secondary caregivers (mother, grandmother, father, and childcare);
- Served as a liaison between family and healthcare system, complementing the physician by addressing the social elements of care, while the physician's role is centered on disease management;
- Provided families with health education, referrals and resources;
- Oriented families to the asthma program;
- Served as the primary contact to the asthma program for the family;
- Conducted assessments between clinics and home visits to determine effectiveness of treatment plan;
- Reinforced asthma education knowledge and skills in plain words;
- Conducted home visits to assess the home environment for asthma triggers, reinforces self management education and skills, and helps families reduce home's asthma triggers in the home;
- Advised asthma team about social barriers and challenges that each family faces as well as the family's strengths and resources;
- Advocated for family's needs and priorities; and
- Maintained appropriate documentation on families for purposes of team communication, program evaluation, reporting, and reimbursements.

As part of the CAI Community Based Intervention, a trained AC worked closely with a family to help them get their child's asthma under control, to increase their confidence in managing asthma, and to communicate more effectively with their healthcare and childcare providers. The following measures describe the services provided by ACs and the percent of the total number of contacts for all enrollees in the program during which these services were provided:

CAI Outcome Measures for Services Provided by Asthma Coordinators [47]



*Total of all percentages exceeds 100% because more than one service may be provided at a single contact.

Outcomes of Asthma Coordinators Services Provided in the CAI

The following are outcome measures describing the improvement in asthma management experienced by children and their families receiving AC services:

- ↓ Use of emergency department visits and hospital admissions (reduced by more than 63% over a six-month period.)
- ↓ Daytime asthma symptoms (twice a week or more) (from 54% to 13%).
- ↓ Night time symptoms (once a week or more) (from 54% at enrolment to 15% at follow-up).
- ↓ Child Care and Preschool absenteeism (from 57% to 27%).
- ↓ Use of quick-relief medicines more than twice a week (from 52% to 17%.)
- ↑ Prescribed long-term controller medicines (from 29% to 51%).
- ↑ Use of written asthma plans (from 39% at enrolment to 81% at six-month follow-up).
- ↑ Quality of life measures substantially improved for children and their caregivers during the intervention period.

Patients' Experiences with their Asthma Coordinators

According to the CAI client satisfaction survey,

- 94% of parents who needed help talking to their child's healthcare provider said that their asthma coordinator helped them communicate with their child's doctor or nurse about asthma.
- 99% felt that their asthma coordinator provided services in a way that respected their family's tradition and lifestyle.
- 88% of the clients who received referrals from their AC said that the referrals helped their family.

Asthma Coordinator Training

Asthma Education Certification

Professional organizations involved in asthma care have identified the need to assure that an advanced level of asthma knowledge and skill is available to patients with asthma, their families, and insurers. Asthma Education Certification (AE-C) is the official designation of a certified asthma educator who has the necessary knowledge and skills to counsel patients in asthma management and has successfully passed the NAECB (National Asthma Educator Certification Board) exam. The NAECB exam is a voluntary testing program used to assess qualified health professionals' knowledge in asthma education. It is an evaluative process that demonstrates that rigorous education and experience requirements have been met. Certification is voluntary and is not required by law for employment in the field, although some agencies may use AE-C certification as a basis for employment, job promotions, salary increases, or other considerations. More information is available at: http://www.naecb.org/.

YES WE CAN Toolkit

The YES WE CAN toolkit, "Managing Children's Asthma: A Community-Focused, Team Approach", and website are other valuable training resources. The toolkit is aimed at public health program coordinators, clinic directors, clinicians, and asthma community health workers. It offers detailed information about the medical-social model of care, related training opportunities, and resources for practitioners. It provides a step-by-step template for how to implement a team model of chronic conditions management. All protocols, forms, and training materials have been extensively tested in the real world. They are available on a CD-ROM that is including in the toolkit. It also offers links to other useful asthma websites and organizations. The YES WE CAN website is located at: http://www.communityhealthworks.org/yeswecan/index.html.

Asthma Education[48,49,50]

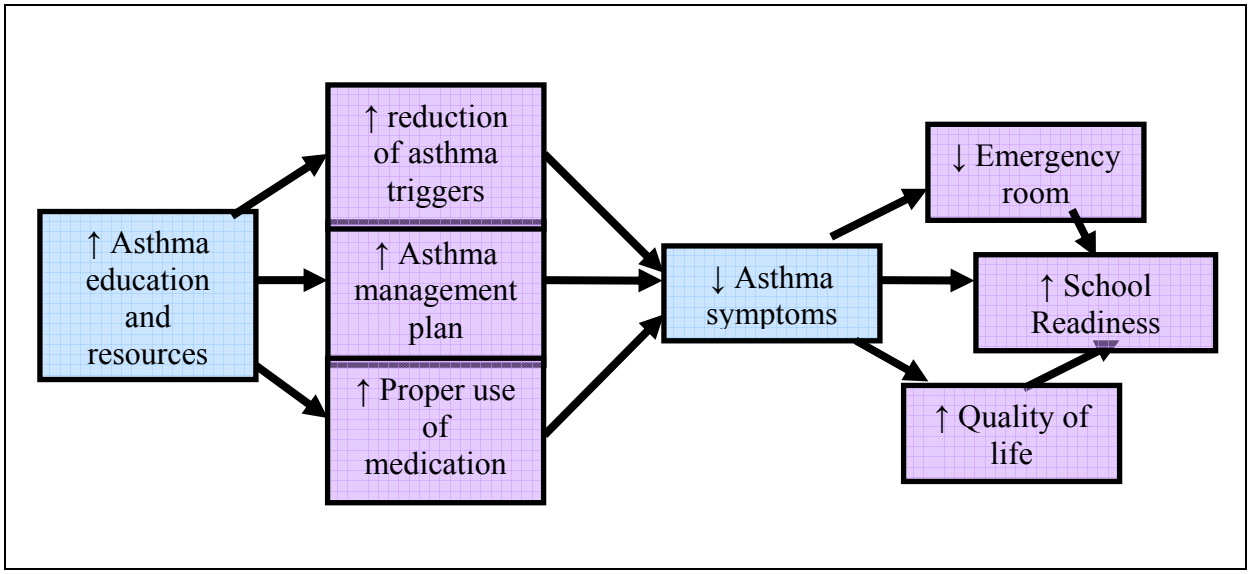
An essential element to improving health outcomes for children with asthma is time built into the office visit to teach the child and family how to recognize asthma symptoms, to learn what triggers the child's asthma and how to avoid them, to use the right medication at the right time, recognize when to act, and to know what to do in an emergency. Although health education may result in increased costs from spending more time with the patient, these up-front costs result in significant decreases in costly services over time and improvement in the child's and family's quality of life.

Asthma education has been evaluated and found to be effective. Specific outcomes were:[51]

- Asthma education is effective in helping parents to manage their children's asthma.
- Better asthma management translates into reduced emergency department visits, asthma symptoms and medical cost.
- The lack of proper asthma management can put a young child at risk for developmental delays, behavioral problems, and permanent lung damage by the time he/she reaches six years of age.
- Giving parents and children information about their illness helps to promote a sense of control and "mastery" over their health.
- As attitudes towards health-related behaviors can persist beyond childhood, education may also influence health outcomes in adulthood.

Asthma Education:

Outcome Variables and Their Relationship to the Child's Health, Quality of Life, and School Readiness[52]



According to CAI community-based intervention client satisfaction surveys, 99% of the clients agreed that the asthma education they received helped them better understand their child's asthma.

Asthma Curriculum

Self-Management Education Model

Unlike traditional patient education, self-management education isn't just about giving the patient knowledge about asthma. Self-management education does this but also helps patients and families masters the skills needed to recognize and treat and manage asthma. It also fosters the confidence to apply the knowledge and skills day to day. It teaches problem solving skills for better health choices.

Essential Topics to Cover in the Asthma Curriculum[53]

- Overview of the disease
- What happens during an asthma episode
- Asthma symptoms
- Asthma warning signs
- Asthma triggers (indoor and outdoor triggers)
- Asthma medications (long term and quick relief medications)
- How to use asthma tools or devices (spacers, inhalers, peak flow meter etc.)
- Using symptoms to assess asthma status/zone
- Emergency medicine
- Exercise
- Asthma Action Plan
- Emergency Action Plan
- Asthma resources
- Role of healthcare provider in managing asthma
- Referrals to other resources

Approaches for Young Children with Asthma[54]

One of the main goals of asthma education is to work with parents and their children with asthma to know when they are having warning signs and to ask for help. Utilizing language they can understand and language that their parents can use. The learning style for a child under five years is as follows:

- Attention span is two to three minutes.
- When talking with child, be at the child's eye level.
- Use pictures to explain warning signs.
- Role-play with the parents or with dolls.
- Provide coloring books, stickers or other entertainment for the child so you have time to talk to the family.
- Children at this age relate to cartoon characters and videos. Some good videos are: *Arthur Goes to the Doctor*, *Buster's Breathless*, and *Sesame Street: A is for Asthma*.

Environmental Assessment[55]

Asthma Coordinators need to convey the importance of removing asthma triggers in the home and other places where children are cared for. Most people spend up to 90% of their time indoors, especially children under five, who spend a large portion of their day at home, in a family child care home, or in a child care center. Sources of asthma triggers in these environments, including dust, animal dander, environmental tobacco smoke, and chemicals, such as cleaning products and pesticides can trigger a child's asthma. Reducing environmental asthma triggers in an important component of an effective asthma management program. Asthma Coordinators can help families identify sources of asthma triggers by conducting home assessments.

Home Environmental Assessment Activities (usually 1- 1.5 hours)

- Assess the home for environmental asthma triggers and help families identify what is needed to decrease exposure.
- Support family in implementing prescribed medical treatment.
- Organize asthma medication box.
- Post asthma action plans in prominent place.
- Reinforce skills around use of inhalers, spacer and peak flow meter.
- Identify barriers interfering with effective asthma management.
- Help identify family's strengths and assets; build upon these to improve ability to effective self-mange asthma.
- Support self-management education and skills.

How do Patients Feel about Environmental Home Assessments?

CAI client satisfaction surveys were administered between October 2002 and July 2004. According to the survey, 96% of the clients agreed that their Asthma Coordinator's advice helped them reduce or get rid of asthma triggers around the home. 98% agreed that it was helpful to have the Asthma Coordinator come to the home[56].

The Childcare Environment

Childcare centers can play an important role in controlling asthma morbidity in young children. In California approximately 45,000 licensed childcare facilities serve about 950,000 young children[57]. It is important to assess the environments where young children are exposed to elements that may potentially trigger asthma, including childcare centers. The Childhood Asthma Initiative assessed asthma-related environmental practices in licensed centers and asthma awareness among childcare staff. This study is discussed further in Chapter Four. The Asthma Coordinator that serves as a liaison between a childcare center and a family can help address the asthma triggers that may exist in the child care setting.

Currently, there are asthma education materials being developed for the childcare work force in California. Interventions to reduce environmental triggers in the childcare setting and increase knowledge about asthma among childcare providers could improve management and outcomes for children with asthma. The *Childcare and Preschool Staff Asthma Training* video and companion handbook have been developed to improve the quality of asthma care for young children in these settings.

Environmental Tobacco Smoke Reduction

Second-hand smoke, also called environmental tobacco smoke (ETS), is a notorious asthma trigger and increases asthma exacerbations in children with asthma. Children are more sensitive to environmental tobacco smoke, as their bodies are still developing and their biochemical processes, body weight proportions and immune system are still immature. Their lungs are smaller and their rate of breathing is faster. This suggests that they absorb more of what is in the air, making triggers such as environmental tobacco smoke more toxic for them. Younger children are even more vulnerable to second-hand smoke, since they spend more time in close proximity to parents, adults and caregivers, and are held by adults more often than older children. When adults and caregivers smoke around young children, the children are forced to inhale the smoke.

Research has shown the dangers of second-hand tobacco smoking affecting children with asthma: In a study of 4,000 children aged 0-5 years, it was found that maternal smoking of more than 10 cigarettes a day was associated with a higher rates of asthma, an increased likelihood of using asthma medication, and an earlier onset of asthma than was observed in children of non-smoking mothers[58].

Research also has shown that when children have been hospitalized for acute asthma and return to a home where there is a smoker, their recovery is impaired. 82% of children that went home to non-smoking households had less than one symptomatic day per week. Only 27% of the children who went home to households with smokers had less than one symptomatic day per week[59].

Approximately 26% of adults in the United States currently smoke cigarettes, and 50% to 67% of children under five years of age live in homes with at least one adult smoker. An estimated 9 million children under the age of five breathe second-hand smoke regularly, usually in the home[60].

In California, 17.5% of adults indicated they were smokers, according to the 1999 California Tobacco Survey. Results of the California Youth Tobacco Survey also indicated that 36% of children who responded had been exposed to second-hand smoke by being in the same room as someone who was smoking during the previous seven days. 25% indicated that they were exposed while in a car during the same time period[61].

Environmental Tobacco Smoke Reduction Education

When working with the caregivers of a child with asthma, a primary objective should be to eliminate the child's exposure to environmental tobacco smoke. The clinician or the Asthma Coordinator should work with caregivers who smoke. The goal is either to help that caregiver

stop smoking or at least stop smoking around the child with asthma. Asthma programs can influence a reduction in the prevalence of smoking among caregivers through (1) education and (2) creating an environment of social influence (such as anti-smoking laws and smoking cessation support forums). Tobacco education and cessation is essential as it functions to enhance knowledge and change attitudes, which can in turn reduce or eliminate tobacco use.

Research on Tobacco Education

CAI projects: The Community Based Intervention (CBI) utilized both tobacco education and application of social influences (consultation, advertising and pamphlets etc) to influence the reduction of smoking behaviors among caregivers of children with asthma. Some Asthma Coordinators included information on the harms of tobacco smoking exposure on a child in their clinical program informational sessions. Asthma Coordinators also provided referrals to tobacco cessation services and consultation. The CAI evaluation results showed a decrease in the number of children exposed to tobacco smoke (32% decrease in CBI clients)[62].

Project Zephyr: Children age 6 -17 exposed to parental smoking were recruited by asthma specialist. Results showed that counseling reduced children's ETS exposure at 6-month post-test an average of 70%, a significantly greater reduction than observed among monitoring group (42%) and usual care (34%)[63].

Healthy Babies Project: Healthy babies under the age of three exposed to maternal smoking were recruited by WIC sites (Robert Johnson Foundation). Results show that babies' parent-reported exposure to mother's smoking in the home decreased 82% in counseling group, compared to 63% for controls[64].

Connecting with the Community Through Asthma Coalitions[65]

> *The community: primary healthcare physicians, specialists, nurse practitioners, hospital staff, asthma coordinators, health educators, childcare providers, teachers, principals, school staff, and parks and recreation staff, directly or indirectly contributing to managing asthma for children.*

Community involvement is key in the prevention and control of the asthma epidemic. Studies assert that involved communities can improve health, social and mental well-being, by developing healthier public policy and offering high quality services. It is important to involve the community in delivering comprehensive asthma care. Some benefits of community involvement include:

Benefits of Community involvement[66]

Community members know the challenges faced by people within their community and the resources available. For example, an asthma coordinator that is well connected with the community would know that it may be difficult for a family without a car to have a 9 a.m. clinic appointment since they may need to take three buses to get to the clinic.

The community serves as a network for intervention. It is a conduit through which officials can spread accurate information to the population, such as when a viral flu outbreak occurred in Los Angeles and it was necessary to inform the community for public health reasons. Information can also flow from the community to public health officials. For example, some public health officials in Los Angeles learned about a landfill leak from the community. The community can also serve as a coalition for broader social and political issues. Following up on information from the community, public health officials are able to then disseminate that information to the greater population in order to help them protect their children's health. For example, advice to stay away from an area where a certain asthma trigger, such as smoke, may be in a high concentration, would help alleviate the children's asthma symptoms.

Community organizations can help identify the needs and resources of neighborhoods as well as decrease possible conflict up front by gaining the support of key community members.

Community Asthma Coalitions

Community asthma coalitions made up of representatives from government, local social service organizations, health care providers, corporations and individuals, are successful in reaching overarching goals by sharing valuable expertise and resources. The U.S. Department of Health and Human Services' report, *Healthy People 2010: National Health Promotion and Disease Prevention Objectives*, recommends employing multidisciplinary and multi-agency strategies in reducing the burden of disease in the U.S.[67] Community coalitions pool the abilities, expertise, and resources of numerous stakeholders[68].

The CAI Community Based Intervention (CBI) Community Asthma Coalitions

The eight CBI projects built asthma coalitions in their communities that contributed to strengthening asthma awareness, programs, policies and regulations. Examples of effective coalition activities and their accomplishments are listed:

Conducted needs assessment: The San Francisco Asthma Task Force administered two fact-finding surveys, one for clinics serving low-income populations and the other for health care payer organizations. Both surveys identified resources needed and provided insight towards advocacy strategies.

Developed and produced health education materials: Little Lungs Asthma Coalition and the San Diego Regional Asthma Coalition produced, revised, updated, and disseminated asthma resource guides in English and Spanish. These guides list contact information for asthma service providers including medical resources, asthma education and support services, smoking cessation information and referrals; childcare information, WIC services, substance abuse services, and social services.

Implemented local asthma programs: The Marin Asthma Collaborative implemented a training program for teachers in the Marin Unified School District, educating them about asthma management in schools. Asthma Start Coalition in Alameda County gave presentations and led discussions targeting medical providers. The Little Lungs Asthma Coalition developed and implemented a series of environmental health, health literacy, cultural and linguistic competency workshops and seminars that targeted healthcare providers, public health professionals, and caregivers of children with asthma

Developed city and institutional policies: The San Francisco Asthma Task Force completed and presented their “Strategic Plan on Asthma for the City and County of San Francisco”. They presented their plan at a hearing before the city services committee of the San Francisco Board of Supervisors. The presentation was a milestone for the task force and served as the official release of their strategic plan to the public.

A key function of asthma coalitions is bringing community leaders , organizations, and individuals together to evaluate the factors that make a community “asthma-friendly”. These factors include environmental policy, housing policy, health care access, school and home indoor air quality, among others. Many of these areas are complex and require the will of several parties to be able to effect change in the community to improve the quality of life for children and adults with asthma. Asthma coalitions can provide evidence-based information and support the political will to help change communities into a more asthma-friendly environment.

A coalition’s success is not guaranteed and working as a coalition can often be frustrating. A coalition’s success depends on many factors including its structure, organization, leadership and communication among members. To assess these factors, the CBI project conducted a survey exploring coalition dynamics and membership experiences. The goal was to investigate elements that effect coalition dynamics within CBI-affiliated asthma collaboratives. The Coalition Member Survey was distributed to seven CBI asthma coalitions participating, first in March 2003 and again in January 2004. The survey explored and examined coalition members’

perceptions about various aspects of the membership, group relationships, communication, organizational climate, and psychological and organizational empowerment.

Group Relationship and Organizational Climate:

- Almost all the respondents agreed that their abilities were being used effectively by the coalition.
- 82% of the members agreed that they felt strongly committed to the coalition.

Psychological and Organizational Empowerment:

- Many coalition members felt that their work made a difference in the community.
- About 82% agreed that the coalition had significantly increased community-wide awareness of childhood asthma problems.
- When asked if they felt their coalition activities had contributed to strengthening asthma-related policies and regulations in the community, almost 73% of survey respondents agreed.

Key Lessons Learned

Partnerships allow coalitions to optimize their project outcomes. By working in a collaborative team, coalitions secured the participation and cooperation of key stakeholders, agencies, organizations and individuals through sharing members' diverse network linkages of stakeholders and agencies that would have otherwise not been available to a single organization.

Coalitions help members optimize their job performances. As resources among the members were pooled, the project outcomes and timeline were optimized.

The communities were not the sole benefactors of the coalitions. Individuals and organizations usually experience mutual benefits from their participation in a coalition. Effective partnerships between coalitions and the participating organizations move the organizations forward in terms of providing them with greater visibility and inroads into communities

Strategies for Developing an Asthma Coalition[69]

Membership: A coalition benefits if members come from a broad array of backgrounds and have differing levels of expertise. Parents, teachers, school nurses, local physicians, public health officers, school counselors, and staff from local health agencies can all bring their diverse opinions to the table to discuss asthma issues from different points of view. This helps facilitate the development of a comprehensive asthma program.

Goals: Having a clear vision or mission statement, goals, and objectives can help to generate support and awareness for the partnership, reduce the possibility of conflicting agendas, identify allies, and minimize distractions that may keep the group from taking appropriate action.

Meetings and Communication: Regular communication to keep coalition staff and coalition members informed is a basic ingredient in successful and long-lasting alliances. Such communication encourages focus on a common purpose, builds trust, increases the sharing of information and resources, and permits members to express and resolve difficulties. Results of a survey of an Alberta, Canada coalition in 1993 revealed that a variety of channels of communication should be used, including regular updates at meetings, circulation of minutes, newsletters, informal gatherings, conference calls and e-mail.

Leadership: Leadership skills have been found to be directly related to the degree of member satisfaction and level of participation, and are thus important in the implementation and maintenance of any alliance. It has been noted that a full-time project director can be key to building external support and developing internal programs. Partnerships with a project manager who assumes a leadership and coordination role tend to be most effective. However, as many newly-formed programs lack the funding for a full-time project manager, many partnerships designate a two or three people to take the lead on specific projects, and they are able to make decisions concerning the organization.

Accomplishments: Celebrating the early successes of an alliance can reduce conflict and increase cohesiveness within the coalition. It also helps to maintain the commitment of individual members of the group. It has been suggested that when opportunities for many levels of commitment are created, and members take a certain level of responsibility for the coalition, member commitment is increased.

Connecting with the Community: Addressing Asthma in the Childcare Setting

Understanding the education needs of childcare providers is an essential first step to developing a childcare training program. As part of the CAI, a survey of childcare providers in California was conducted on their knowledge about asthma signs and symptoms, triggers, how to reduce asthma triggers in the childcare environment, and how to care for children with asthma. The findings from this study are presented below:

Childcare is an important part of life for families with children under the age of five years. Most parents work or go to school part- or full-time and depend on childcare providers to nurture, educate, and provide care for their children. There are over 950,000 children enrolled in childcare in California; most of these children are under the age five.

The childcare workforce is an important part of the community. They provide services to children in over 9,710 childcare centers and 35,739 family childcare homes[70]. Childcare stakeholders should be involved in planning child focused health services and should be a part of coalitions working to address childhood health issues.

Asthma episodes in the preschool-aged population, especially among infants and toddlers, can be hard to detect. Until children are able to tell the adults caring for them that they are having trouble breathing, childcare providers must know how to observe early warning signs and respond appropriately.

Childcare providers in California have varying levels of knowledge about asthma signs and symptoms, triggers, how to reduce asthma triggers in the childcare environment, and how to care for children with asthma. The *Understanding Asthma Study*, a survey or responded by 284 licensed childcare center directors and 666 childcare center staff members found the following[71]:

- During the preceding year, 55% of site directors treated an asthma episode with medication.
- Dust was the most commonly reported asthma trigger (84%).
- Stuffed toys represented the second most commonly reported asthma trigger
- 60% of sites had wall to wall carpeting
- Although smoking in California childcare centers is illegal, tobacco smoke was reported by 7% of centers.
- Asthma-related environmental risk factors are commonly reported in childcare centers
- Asthma knowledge among childcare staff members varies.

Strategies for Childcare Providers

As a follow up to the *Understanding Asthma Study*, CAI held three focus groups of childcare providers, and two focus groups of childcare provider trainers to identify potential barriers and effective strategies for improving childcare environments, making them more asthma-friendly. The provider groups included providers from urban and rural settings, English and Spanish speakers, and those working in childcare centers as well as those that work in family childcare homes. These are a few of the findings from the focus groups[72]:

- There is a lack of financial resources to purchase new equipment or alter existing environmental conditions.
- There is limited control over some environmental influences (e.g., outdoor air quality, smoking parents and staff who introduce triggers to the facility, influencing a landlord to alter conditions if a facility or home is rented)
- Financial assistance or rebates to mitigate the costs of implementing asthma-friendly recommendations would serve as an incentive
- Certificates indicating that a childcare setting met a set of asthma friendly environmental standards would also serve as an incentive.
- Childcare providers preferred learning about asthma through videos and classes than through other educational methods

Childcare providers have an important role in addressing childhood asthma. There are resources available at the state and local level for childcare providers to learn more about

asthma, how to respond when children exhibit signs and symptoms and how to improve childcare environments to reduce exposure to asthma triggers. See the resource section for more information.

Connecting with the Community: Public Asthma Education – Using a Media Campaign[73]

Certain conditions are necessary for a media campaign to successfully alter health behaviors and alter outcomes in the long term. The necessary factors include:

- Ensuring sufficient exposure of the audience to the campaign message and themes

This is brought about either by buying time or space in the media or by having time and space donated to the campaign. An extensive study by Kaiser Family Foundation, for example, reported that reliance on public service announcements (PSAs) often results in messages being played during less optimal time slots, leading to limited message exposure to the intended audience. However, owing to lack of funds, campaign planners are often limited to using only PSAs. The solution is to supplement the campaign with other strategies (utilizing printed materials, ads in newspapers and magazines; patient education materials, such as brochures or fact sheets, graphic media, such as billboards and posters; and labeled promotional items like T-shirts and calendars).

- Using social marketing tools (such as; pamphlets, posters and advertising) to create the appropriate messages.

Careful attention to messages can contribute to redefining the issues for the target audience, enhancing the probability of campaign success.

- Creating a supportive environment

Create supportive environment that enables individuals to make the changes in health behavior called for in campaigns. A campaign involving the promotion of folic acid among women of childbearing age used PSAs and printed educational materials, in addition to mobilizing volunteers, who helped grocery stores to label foods rich in folic acid, and passed out educational materials and green ribbons (promoting folic acid awareness) to community members. The campaign was successful in increasing awareness of benefits of folic acid and knowledge about folic acid. Many of the CAI asthma programs displayed their asthma resources and educational materials at health fairs, which helped them incorporate themselves into their communities. Becoming visible in the community helped them increase awareness about asthma in children under five.

- Developing campaigns with a careful understanding of the determinants of health behaviors that could potentially lead to desired health outcomes (theory-based campaigns)

There are several theories of health behavior, such as the health belief model, social cognitive theory, and the theory of reasoned action. They identify pathways and determinants that ultimately lead to health behavior change.

A Collaborative Public Education Ad Campaign: The Asthma Fresh Air Campaign

As part of the CAI, a collaborative campaign was developed by the Los Angeles County Asthma Coalition (LACAC) and CDHS, Children's Medical Services Branch (CMSB). Participants in the planning, implementation, and evaluation of the campaign include the Long Beach Alliance for Children with Asthma, the Asthma and Allergy Foundation of America, the LA County Health Department with funding from First 5 California. The campaign was designed by Durazo Communications, Inc.

The Asthma Fresh Air Campaign

The goal of the campaign is to promote an asthma awareness message, focusing on parents and caregivers of children, using a single theme – "Asthma Can Be Controlled". The Los Angeles County Asthma Coalition and CMSB spearheaded the development of the tools required for a public information campaign. The campaign is packaged as a set of tools or media materials that were developed using market research and testing.

The campaign and media tools were made available to individual agencies and organizations under specific terms and conditions. To ensure the integrity of the campaign and that messages and images associated with the campaign remain effective, consistent, recognizable and memorable, the graphic materials were available for limited customized use. The campaign was designed to be used in a variety of print formats. Each "creative execution" or "advertisement" was designed with customizable space that could be used to add an organization's logo, name, phone number and call for action. In addition, print ads were available for which additional asthma messages could be added.

Source: The Los Angeles County Asthma Coalition

There are several strategies that should be considered when developing a public education campaign.

Writing Campaigns[74]

Working with Reporters and Editorial Boards

Develop events that will interest the media and help you to get the word out, such as a public forum

Cultivate relations with specific reporters who have an interest in (or are assigned to cover) your topic. Make sure they are informed every time something newsworthy is about to occur (your forum, rally, release of report/survey findings, media campaign, etc.).

Letters to the Editor & Op-Ed Pieces

Letters to the editors of newspapers and magazines, along with op-ed pieces (opinion essays), can be very influential at the local or state level.

The controversy could stimulate a newspaper to assign a reporter to write an article. Advocates can also use the media to influence state-level policymakers.

Ideas to Help You Get Your Letter to the Editor Published

Use your own words--ideas that come directly from you will be most powerful.

Keep it very brief and to the point

Respond right away to a specific article that has just been published. This is key to getting your letter published.

Include contact information including your name, address, phone number and e-mail address. Often newspaper editors need to call to make sure you are the person who wrote the article or letter.

Sustainability

Sustainability is a common concern for many innovative programs, both in business and healthcare. Continuous financial support is needed to maintain the human and technical resources that are in operation after a program is launched. To make a program more likely to continue after initial funding has ended, the following issues should be taken into account[75]:

The Importance of Planning

- Set goals and objectives.
- Assess program capabilities.
- Design alternative actions to achieve the goals.
- Assess effectiveness of the plans through an evaluation process.
- Develop sustainability plans at the start of the program, not at the end.

Community Participation

- Literature shows community participation has a positive effect on sustainability.
- Lasting change is more likely to occur if a broad range of health professionals, health institutions, community groups and private citizens are involved in a collective approach.

Organizational and Managerial Structures

- Programs that are well integrated with existing systems or into their host organizations are more sustainable.
- The ability to integrate may be influenced by the compatibility of the program with the organization's mission and activities.
- The adaptability of the program contributes to continuity as the program and the environment adjust to each other.

Funding Resources[76,77]

Fund-raising strategies need to be multifaceted to take advantage of every possible source. Funding can come from public funds, foundations, individuals, and private companies. In-kind donations can be important as cash. Federal, State, and profit/not-for-profit insurances and health plans have all developed asthma care programs, since programs such as the CAI show that they improve asthma outcomes and reduce use of expensive hospitalizations and emergency visits.

The following funding resources are available in many large libraries as well as in all Government depository libraries:

- Catalog of Federal Domestic Assistance
- The Federal Register
- Congressional Research Service (CRS) Info Pack 50G, 'Grants and Foundation Support'
- Foundation Directory

In-Kind

In-kind donations, such as staff and equipment, may be a major source of the resources you need to get started. Do not forget to acknowledge in-kind donations and show your appreciation to the donating organization.

Foundations

Several foundations offer grants for public health projects, especially projects that service under-represented and low-income communities. Here are examples:

- The National Institutes of Health, http://www.nih.gov.awards grants to community-based health programs for asthma interventions.
- The American Lung Association (ALA), http://www.lungusa.org, awards grants.
- SchoolAsthmaAllergy.com, http://www.schoolasthmaallergy.com, posts grants available to school nurses.
- The Tides Foundation, http://www.tidesfoundation.org, has a community clinics initiative to help community clinics in California improve their technology and information systems, and is also a good resource for help in setting up a non-profit organization.
- The Joint Council of Allergy, Asthma and Immunology, http://www.jcaai.org, reports on available grants, rather than giving out grants itself.
- The Robert Wood Johnson Foundation, http://www.rwjf.org/index.jsp, is the nation's largest philanthropic organization devoted to health and health funding.
- The California Endowment Foundation, http://www.calendow.org/, is a private health foundation in California that initiates projects and partners with community organizations to fund projects that improve healthcare access and the overall health status of Californians.

Individual Donors

Most non-profit organizations rely heavily on donations from individuals. Consider whether your local situation makes it realistic to think of creating an entity like a non profit "Friends of the Asthma Program" to allow tax-exempt donations from individuals.

Other Community Institutions

Private sector contributions often come from major local employers who welcome the opportunity to demonstrate their concern for the community's health. A good first step is to find out the giving plans and schedules of local companies and their granting guidelines. Private sector contributors are often particularly interested in funding some aspect of a program for which they can be visibility and publicly acknowledged, e.g., the donation of a piece of equipment or vehicle.

Billing for Asthma Care and Education[78,79,80]

Since asthma education is a key component to achieving self-management, it is essential that health care providers include it in their care; especially for young children and their families. A key barrier to effective asthma education is that it takes time and many busy primary care practices cannot afford to allocate the time it takes to provide adequate education. Many healthcare providers are not aware that asthma education is reimbursable. However, the complexity in coding and billing can be overwhelming. The federal Center for Medicare and Medicaid Service (CMS) provides the regulatory guidelines for services, procedures and supplies covered under the Medicare and Medicaid programs. Although somewhat uniform for the Medicare program, CMS reimbursement regulations vary from state to state for Medicaid and may have different local or state codes to identify services, procedures or supplies. However, this variation may be eliminated over time as HIPAA legislation becomes operational as it requires standardization in billing codes nationally.

Questions and Answers about Asthma Coding, Billing, and Reimbursement

The following are information that clinical providers may find useful in implementing a comprehensive asthma program:

- California standards and Medi-Cal eligible services by physical description or coding described below may be obtained at http://medi-cal.ca.gov/.
- The American Medical Association (AMA) and Centers for Medicare and Medicaid Service (CMS) determine the codes and descriptions of services.
- All coding resources referred to in the document are reviewed, revised and published each year and are available through several sources such as medical bookstores, or Ingenix (http://www.codingbooks.com).
- Information on coding and reimbursements strategies other states are taking available at http://www.naecb.org

What is the Medicare Outpatient Prospective Payment System?

The Outpatient Prospective Payment System is a new Medicare methodology designed to reimburse hospitals and hospital-based outpatient clinics (HBOC) for outpatient Medicare services. Under OPPS, hospitals will be reimbursed for outpatient services by using Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) codes submitted on the hospital or HBOC bill. The OPPS payment system is analogous to the physician fee for service payment system. Both systems determine payment based on the CPT and HCPCS codes.

What about billing for outpatient services provided by outside agencies either directly to patients or to patients through hospital-based outpatient systems?

These service and associated reimbursement rates are described in detail under the CMS Non-Prospective Payment System Schedule. Refer to the Non-physician Provider website at this URL for more information:
http://www.cms.hhs.gov/medlearn/matters/mmarticles/2004/SE0418.pdf

What are Ambulatory Payment Classifications?

Ambulatory Payment Classifications (APC) were developed to establish both the fiscal relationship between the inpatient driven Diagnosis Related Group and similar CPT/HCPCS services performed in the outpatient setting, and to allow billing offices to determine the appropriate coinsurance cost the patient may incur for that service. For example, CPT 94014 Patient Recorded Spirometry (Peak Flow Instruct) has an APC status of "X" for ancillary service with a group code of 368.

For free information on APCs check this website: http://www.cms.hhs.gov/providers/hopps/2005fc/1427fc.asp. The website may be confusing and may require several hours of time for the inexperienced biller. Rates are based on a CMS published professional service hourly wage scale estimates. The *Complete Guide To APCs* by St. Anthony Publishing provides additional information on billing for asthma education. It has an easy to use introduction and overview that directs the reader to specific medical conditions of interest.

How does an APC differ from a DRG?

APCs are designed to reimburse outpatient services including emergency services and urgent care. Diagnostic Related Groups (DRGs) are for inpatient services. Medicare patients who are admitted to the hospital will continue to the have the cost of any emergency department care bundled into their inpatient DRG.

How are emergency physicians, physician assistants or nurse practitioners reimbursement affected by APCs?

APCs do not include payment for physician and mid-level provider services. Payment for physicians, physician assistants and nurse practitioners will continue to be paid based on the Medicare fee schedule and appropriate CPT/HCPCS coding.

The following information provides specific information on billing for asthma education:

Billing for Asthma Education

- Use HCPCS Code S9441 (*Asthma education, non-physician provider, per session*) for asthma education by a non-physician practitioner.
- The procedures such at Metered Dose Inhaler and Peak Flow Meter Instruction are found in HCPCS codes S8096-S8110.
- Unfortunately, California's Medicaid program, Medi-Cal, does not reimburse for these services when billed by a Non Prospective Payment Plan Provider. NPPPPs who are physicians must use the appropriate CPT coding for these procedures to be reimbursed.
- To bill for asthma education (counseling/coordinating care [C/CC]), the provider must spend more than 50% of the total face-to-face visit time counseling the patient and/or coordinating care. Select the level of service based on the acuity, history and medical decision-making as supported by progress notes of the visit as documented in the medical chart. (Refer to CPT 2005 "Professional Edition" Evaluation and Management Service Guidelines and Coding.)
- Adequate documentation of C/CC time and total visit time is essential if billing for this service. Reporting time for inpatient services involves face-to-face and unit/floor time.
- Both physician and non-physician providers working under the direction of a physician may conduct and be reimbursed for evaluation and management service coding, appropriate to the visit.

Key Asthma Organizations and Websites

Allies Against Asthma
http://www.asthma.umich.edu/

Allergy & Asthma Network/ Mothers of Asthmatics, Inc.
http://www.aanma.org/

American Lung Association California
http://www.californialung.org/

American Lung Association of the Central Coast
http://www.lungusa.org/centralcoast/

American Lung Association of Los Angeles County
http://www.lalung.org/

American Lung Association of San Diego and Imperial Counties
http://www.lungsandiego.org/asthma/article_childhood.asp

American Lung Association of San Francisco and San Mateo Counties
http://www.lungusa.org/sanfrancisco_sanmateo/

Asthma and Allergy Foundation of America, Southern California Chapter
http://www.aafasocal.com

National Initiative for Children's Healthcare Quality (NICHQ)
http://www.nichq.org/initiatives/

Regional Asthma Management Prevention Initiative
http://www.rampasthma.org

Asthma and Schools

Asthma and Schools
http://www.asthmaandschools.org/

School Asthma Allergy
http://www.schoolasthmaallergy.com/

Asthma Data and Statistics

California Health Interview Survey
http://www.chis.ucla.edu

State of California Agencies

California Action to Fight Asthma
http://www.calasthma.org

California Air Resources Board
http://www.arb.ca.gov/research/indoor/indoor.htm

California Breathing
http://www.californiabreathing.org/

California Children's Environmental Health Program (CalEPA)
http://www.calepa.ca.gov/childhealth

California Department of Health Services, California Asthma Public Health Initiative
http://www.dhs.ca.gov/ps/cdic/cdcb/Medicine/Asthma/index.htm

California Environmental Protection Agency
http://www.calepa.ca.gov/

California Department of Health Services Indoor Air Quality Program
http://www.cal-iaq.org/MOLD

Professional Organizations and Associations

American Academy of Allergy, Asthma, and Immunology
http://www.aaaai.org

American Academy of Pediatrics
http://www.aap.org

American Association for Respiratory Care
http://www.aarc.org

California Primary Care Association
http://www.cpca.org

Center for Children's Health and the Environment,
Mount Sinai School of Medicine
http://www.childenvironment.org

Children's Environmental Health Network
http://www.cehn.org

Children's Health Environmental Coalition
http://www.checnet.org

Environmental Working Group
http://www.ewg.org

Latino Issues Forum
http://www.lif.org/

Physicians for Social Responsibility
http://www.psr.org

Federal Agencies and Organizations

Centers for Disease Control and Prevention (CDC)
http://www.cdc.gov/nceh/airpollution/asthma/default.htm

Environmental Health Perspectives
http://ehp.niehs.nih.gov

Environmental Protection Agency
http://www.epa.gov/iaq/schools/asthma/

Global Initiative for Asthma
http://www.ginasthma.com/

National Asthma Education & Prevention Program
http://www.nhlbi.nih.gov/

National Institute Environmental Health Sciences
http://www.niehs.gov

CAI Participating Agencies and Organizations

Asthma and Allergy Foundation of America, Southern California Chapter
http://www.aafasocal.com

Asthma Education & Resource Council
http://www.asthmacouncil.org

Children's Hospital Oakland
http://www.childrenshospitaloakland.org/

Children's Hospital and Health Center, San Diego
http://www.chsd.org/

Council of Community Clinics – San Diego
http://www.ccc-sd.org

Collaborative on Health and the Environment
http://www.cheforhealth.org

Darin M. Camarena Health Centers, Inc.
http://www.camarenahealth.org/

San Francisco Department of Public Health
Children's Environmental Health Promotion Section
http://www.dph.sf.ca.us/cehp/Asthma/index.htm

Yes We Can (Community Health Works, SFSU)
http://www.communityhealthworks.org/yeswecan

Smoking Cessation Websites

American Lung Association http://www.lungusa.org/tobacco/

- Includes information on quitting smoking, smoking as it relates to women, and teen smoking. This site also contains information on their Not On Tobacco (NOT) program, a ten-session tobacco cessation program for teens and the Freedom from Smoking, tobacco cessation program for adults.

Environmental Protection Agency http://www.epa.gov/smokefree/

- Gives information and links to resources about secondhand smoke, lists of publications about secondhand smoke, and gives basic information about secondhand smoke and how it affects asthma.

American Cancer Society http://www.cancer.org/docroot/PED/ped_10_1.asp?sitearea=PED

- The ACS website's section on tobacco smoke is divided into four categories, Health Issues, Quitting Tips, Public Issues and Smoking Related Cancers.

Campaign for Tobacco-Free Kids http://www.tobaccofreekids.org

- Offers current tobacco news, youth action, research and facts, information about your state, links to other useful sites.

Center for Disease Control and Prevention http://www.cdc.gov/tobacco/

- CDC's Tobacco Information and Prevention Sources (TIPS) offers an up- to-the-minute count of the young people who have started smoking so far this year. This site also includes the Surgeon General's reports, quit tips, research and data, tips for kids, tips for teens, educational materials, and publications.

Cultural and Linguistic Competency Resources and Websites

Association of American Indian Physicians
http://www.aaip.com/

Center for Cross Cultural Health
http://www.crosshealth.com/

Cross Cultural Health Care Program
http://www.xculture.org/

Cultural Competency: An Essential Ingredient for Quality Access and Elimination of Disparities (BPHC Quality and Culture web site)
http://www.bphc.hrsa.gov/quality/default.htm

Diversity Rx
http://www.diversityrx.org

EthnoMed
http://www.ethnomed.org/

Office of Minority Health
http://www.omhrc.gov/cultural/

National Center for Cultural Competency
http://gucchd.georgetown.edu//nccc/

Asthma Education Resources

Kaiser Permanente
"Your Child and Asthma" video. English, Spanish, Mandarin and Cantonese.
http://www.kaiserpermanente.org/toyourhealth/video.html

Pedipress, Inc.
Asthma Peak Flow Diary
www.pedipress.org; 1-800-611-6081

Public Broadcasting Service
"Buster's Breathless" video
http://www.pbskids.org/arthur

Starbright Foundation
"Quest for the Code" video game. English and Spanish
http://www.starbright.org; 1-800-315-2580

ZAP Asthma Adventure comic Book
http://www.sph.emory.edu/zapasthma/comics.htm

Online Asthma Club
Asthma Busters
http://www.asthmabusters.org/

Sesame Street A is for Asthma
Children's Television Workshop (CTW)
http://www.sesameworkshop.org/EducationalResources/

Allergy Control Products, Inc
1-800-422-3878

National Allergy Supply
1-800-522-1448

California Smoker's Helpline
http://www.californiasmokershelpline.org 1-800-766-2888

Asthma and Schools
http://www.asthmaandschools.org

California Department of Health Services Indoor Air Quality Program
http://www.cal-iaq.org/MOLD

Resources on Coalition Building

Dowling,J., O'Donnell H.J., Wellington Consulting Group Ltd (2000). A Development Manual for Asthma Coalitions. The Chest Foundation. National Asthma Education and Prevention Program.

Dowling,J., O'Donnell H.J., Wellington Consulting Group Ltd (2000). A Descriptive Study of Asthma Coalitions. The Chest Foundation. National Asthma Education and Prevention Program

Partnering with the NAEPP – Asthma Coalition Exchange
http://www.nhlbisupport.com/asthma/coalitioncorner/report/html

CAI Projects and Coalitions : Services and Findings – 2001 to 2004

The following is a brief description of the eight communities and agencies that participated in the Childhood Asthma Initiative. Many of these programs have secured sustainable funding and continue to provide services for children with asthma in their communities.

Alameda County Public Health Department
Oakland
The Asthma Start Program served children under age 5 with asthma living in Alameda County. Asthma Start provided case management services, asthma health education, in-home asthma trigger assessments, and advocacy with landlords as appropriate. After being in the program for a minimum of three months, more than half (55%) of the program's clients showed a decrease in asthma symptoms, and 47% of clients had a decrease in ER visits compared to the previous six months. Asthma Start provided services in English and Spanish and partnered with the Children's Hospital Oakland to provide asthma treatment services. Additionally, Asthma Start was involved with community-specific activities such as childcare provider training, advocacy for smoke-free locations and healthcare provider training. Coalition: Asthma Start Coalition.

American Lung Association of the Central Coast
Monterey
The Early Childhood Asthma Initiative (ECAI) provided asthma management services, using Asthma Coordinators, to families of children under the age of five, diagnosed with asthma. The American Lung Association of the Central Coast (ALACC) managed the ECAI program in a tri-county area of California with a large population of Hispanic migrant workers. These families in the ALACC service area had special needs due to the socioeconomic and demographic circumstance of the migrant workers. These circumstances included lack of access to healthcare services, inadequate housing, and exposure to environmental circumstances that adversely impact asthma outcomes. The ALACC ECAI program was developed specifically to adapt the asthma management model to these particular needs. Coalition: Central Coast Asthma Coalition.

American Lung Association of San Diego and Imperial Counties
San Diego
The San Diego Childhood Asthma Initiative was a collaboration among the American Lung Association, Children's Hospital and Health Center, and the Council of Community Clinics. There were three components to the Initiative: (1) Care coordination for families was provided by an Asthma Coordinator who worked with the child's health care provider to coordinate care centered on a written asthma action plan. The Asthma Coordinator visited the family in their home and provided asthma education and an in-home environmental assessment that assisted the family in identifying and minimizing asthma triggers in the home. The Asthma Coordinator also interacted with the child's childcare provider. (2) Community Education Staff conducted asthma education workshops for childcare providers, family childcare providers, and parent groups. Continuing education workshops were also conducted for health care professionals wanting to learn more about asthma management following national guidelines. (3) Asthma Treatment Services were provided to ensure that children under the age of five who were not eligible for any health insurance, had access to asthma treatment services through a local community clinic including medical visits, medication and medication administration devices. Coalition: San Diego Regional Asthma Coalition.

Asthma & Allergy Foundation of America, Southern California Chapter
Los Angeles
The primary focus of this initiative was to provide free community intervention and treatment services for children age 0-5 in downtown and south central Los Angeles. Intervention services included a home visitation program in which Asthma Coordinators provided one-on-one asthma education, home/daycare environmental assessment, assistance in allergen abatement, and follow up with the child's treatment provider. Treatment services were available for children with persistent asthma who are uninsured.

San Francisco Department of Public Health
San Francisco
Services were provided for children with asthma and included: education about asthma, feedback and instruction on the proper use of medical devices, assessments, allergy control products and referrals. San Francisco Department of Public Health also worked with *Yes We Can!* and the American Lung Association of San Francisco and San Mateo Counties who assisted with childcare provider education and parent advocacy. Coalition: San Francisco Asthma Task Force

American Lung Association of Los Angeles County
Los Angeles
The American Lung Association of Los Angeles County (ALALAC), in partnership with the Northeast Valley Health Corporation (NEVHC), conducted a community asthma intervention pilot project entitled *Little Lungs: A Coordinated Approach to Asthma Management*. The project started in 2001. The program has provided asthma management services to children under age 5 and their families in the San Fernando Valley (SPA2). Other key project activities included 1) Supporting a diverse asthma collaborative to promote conservation of resources, faster program implementation, reduction of risk, and access to specialized resources; 2) Building community awareness about asthma by developing and distributing linguistically and culturally appropriate materials; 3) Developing a quality improvement protocol to assist primary care providers in improving asthma care and education for families in accordance with National Asthma Management Guidelines. Coalition: Little Lungs Asthma Coalition

Asthma Education & Resource Council
Larkspur
The mission of the Asthma Education & Resource Council (AERC) was to increase community understanding of the preventive management of asthma through quality educational programs and resources. AERC adhered to current National Institutes of Health Guidelines for the management of asthma. It provided preventive education and practical strategies for individuals and families and those who care for families. The AERC's programs included asthma classes and individual education sessions in English and Spanish, community education programs, updates for health professionals, asthma training for childcare providers and school staff, and home environmental assessments.
Coalition: Marin Asthma Collaborative

Darin M. Camarena Health Centers, Inc.
Madera
Darin Camarena's Community Asthma Intervention program focused on structured education and patient self-management using Asthma Coordinators who worked closely with families through individual asthma education encounters and family group sessions. Issues addressed with families included identification of asthma symptoms and triggers, instruction on the proper use of medications, and the importance of having a Medication Management Action Plan. Coordinators also provided home environmental assessment visits, referrals to outside resources, and assistance in communicating with childcare providers. Asthma education services and materials were provided in English and Spanish.

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